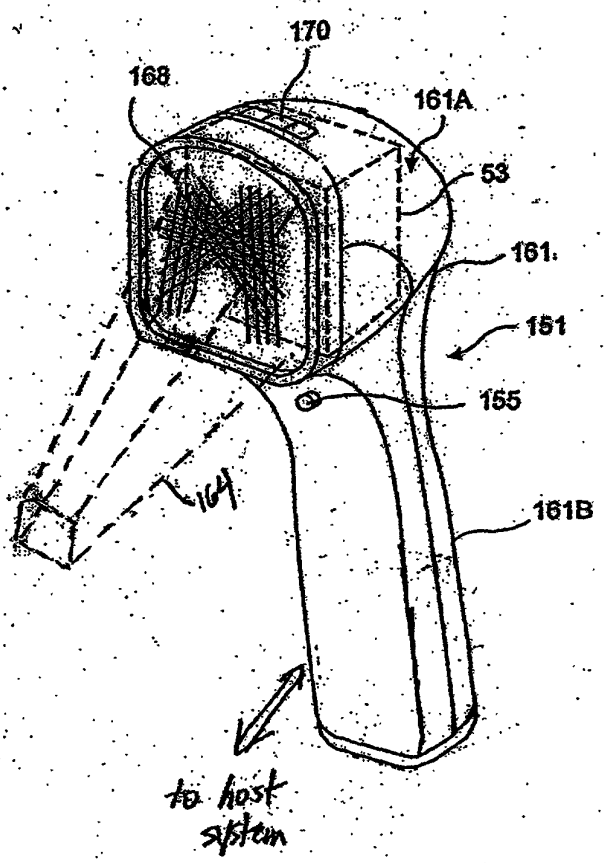


FIG. 1A

20021342 010802

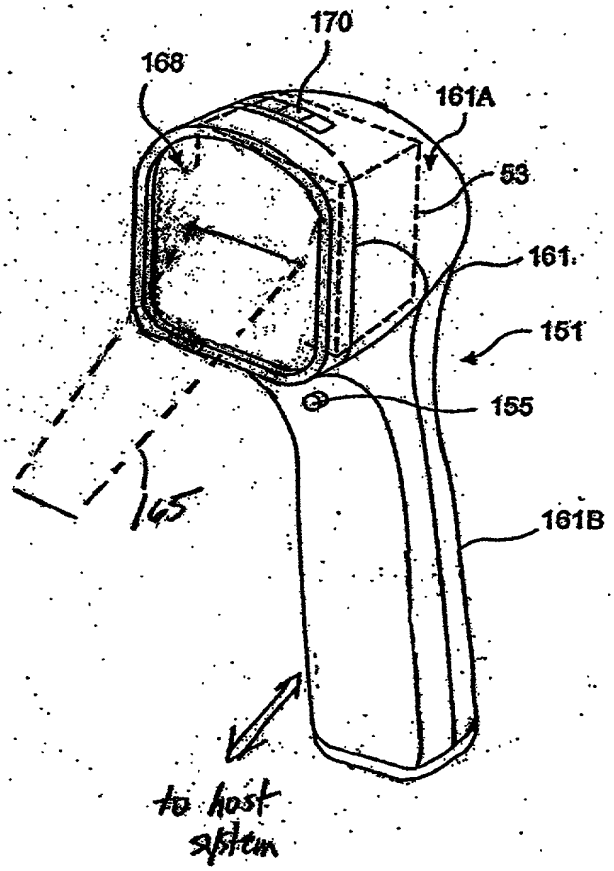


FIG. 1B

20220110 24E4TC0CT

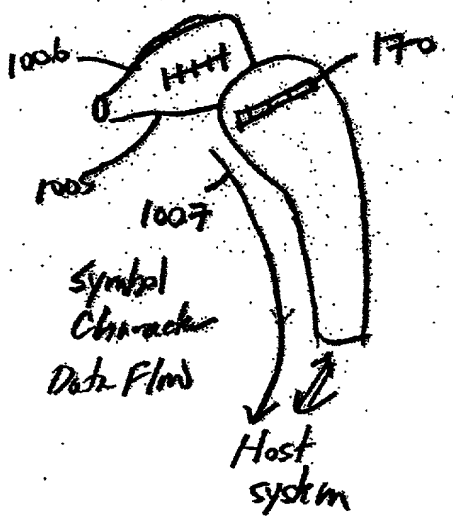


FIG. 2A

20240040024A1

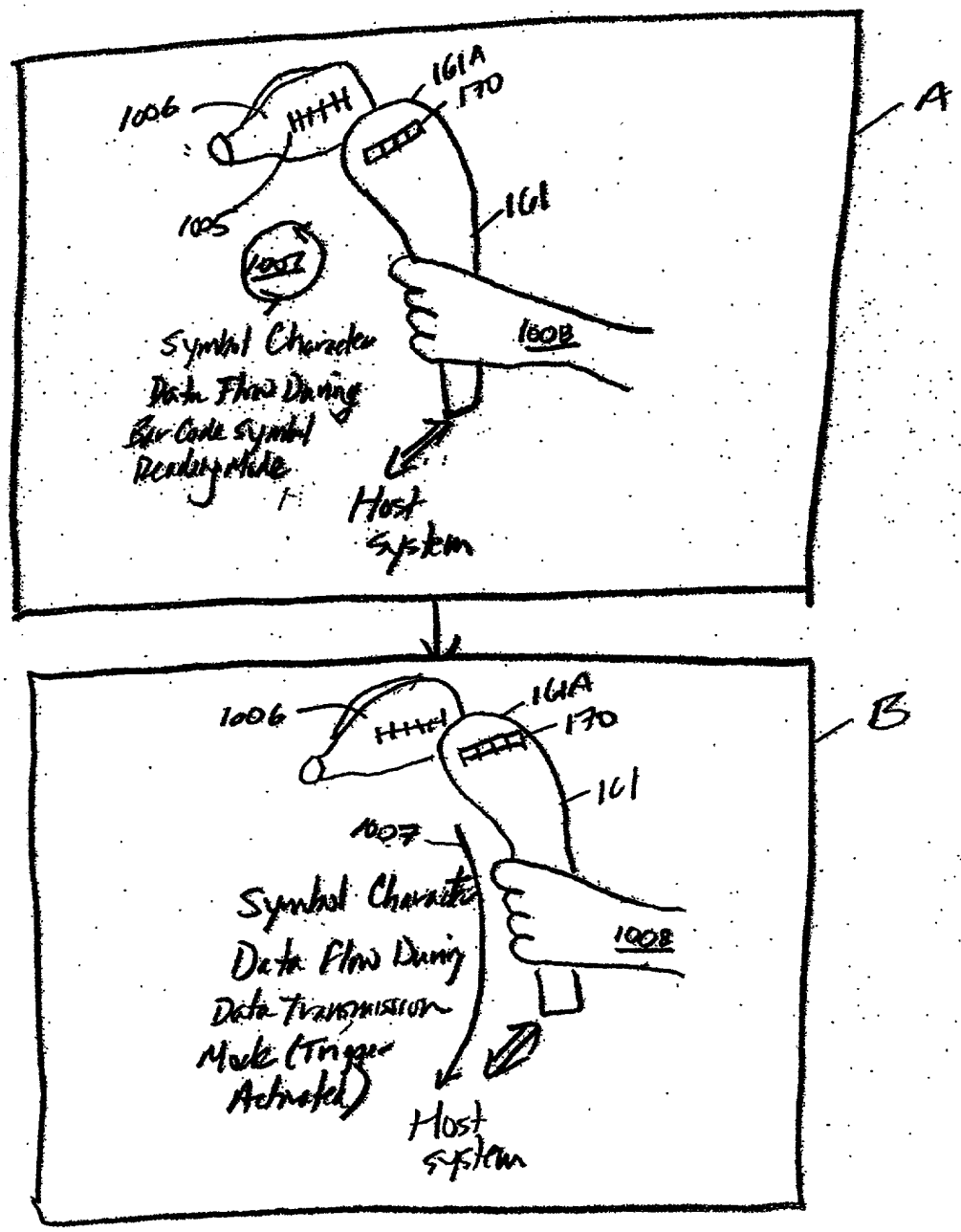

A
1006
161A
170
161
105
1007
Symbol Character Data Flow During Bar Code Symbol Reading Mode
160B
Host System
B
1006
161A
170
161
1007
Symbol Character Data Flow During Data Transmission Mode (Trigger Activated)
1008
Host System

FIG. 2B

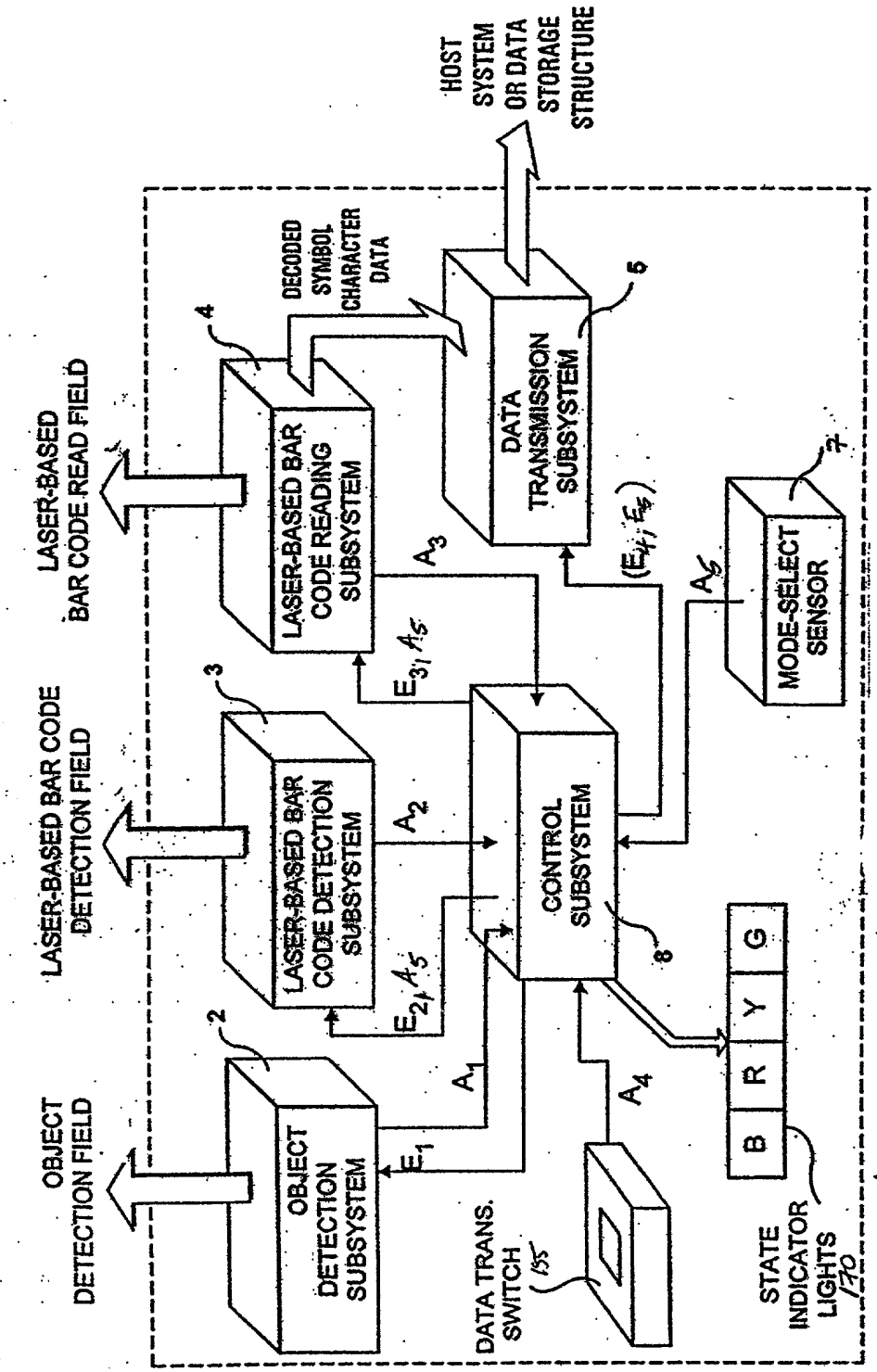

HOST SYSTEM OR DATA STORAGE STRUCTURE
DECODED SYMBOL CHARACTER DATA
LASER-BASED BAR CODE READ FIELD
LASER-BASED BAR CODE DETECTION FIELD
OBJECT DETECTION FIELD
LASER-BASED BAR CODE READING SUBSYSTEM
LASER-BASED BAR CODE DETECTION SUBSYSTEM
OBJECT DETECTION SUBSYSTEM
DATA TRANSMISSION SUBSYSTEM
CONTROL SUBSYSTEM
MODE-SELECT SENSOR
DATA TRANS. SWITCH
STATE INDICATOR LIGHTS
B
R
Y
G
A1
A2
A3
A4
A5
E1
E2, A5
E3, A5
(E4, E5)
2
3
4
5
7
8
155
170
157

FIG. 3

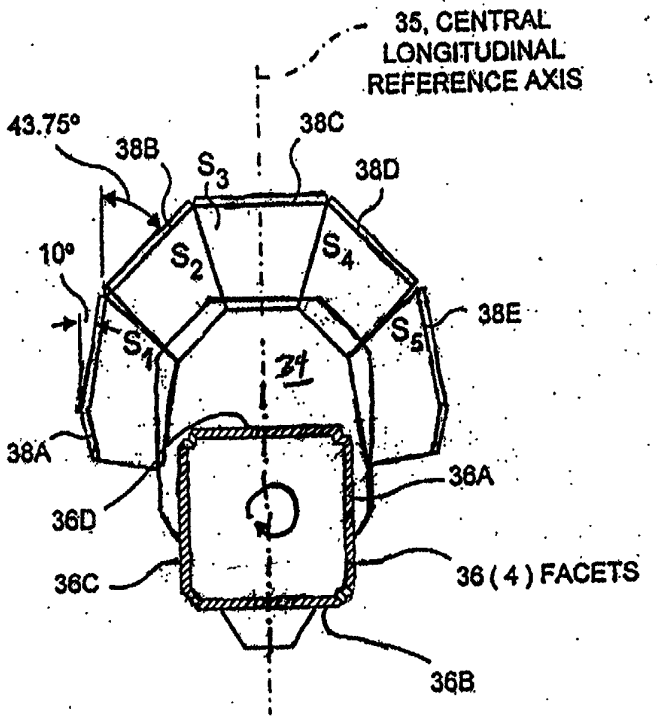
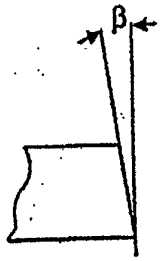


FIG. 4A

	TWIST α	BEND θ
S_{1-5}	10°	46.0°
S_{2-4}	43.75°	42.5°
S_3	90°	40.5°

FIG. 5B



$\beta_1 = 6°00'$
$\beta_2 = 9°00'$
$\beta_3 = 7°30'$
$\beta_4 = 10°30'$

FIG. 5A

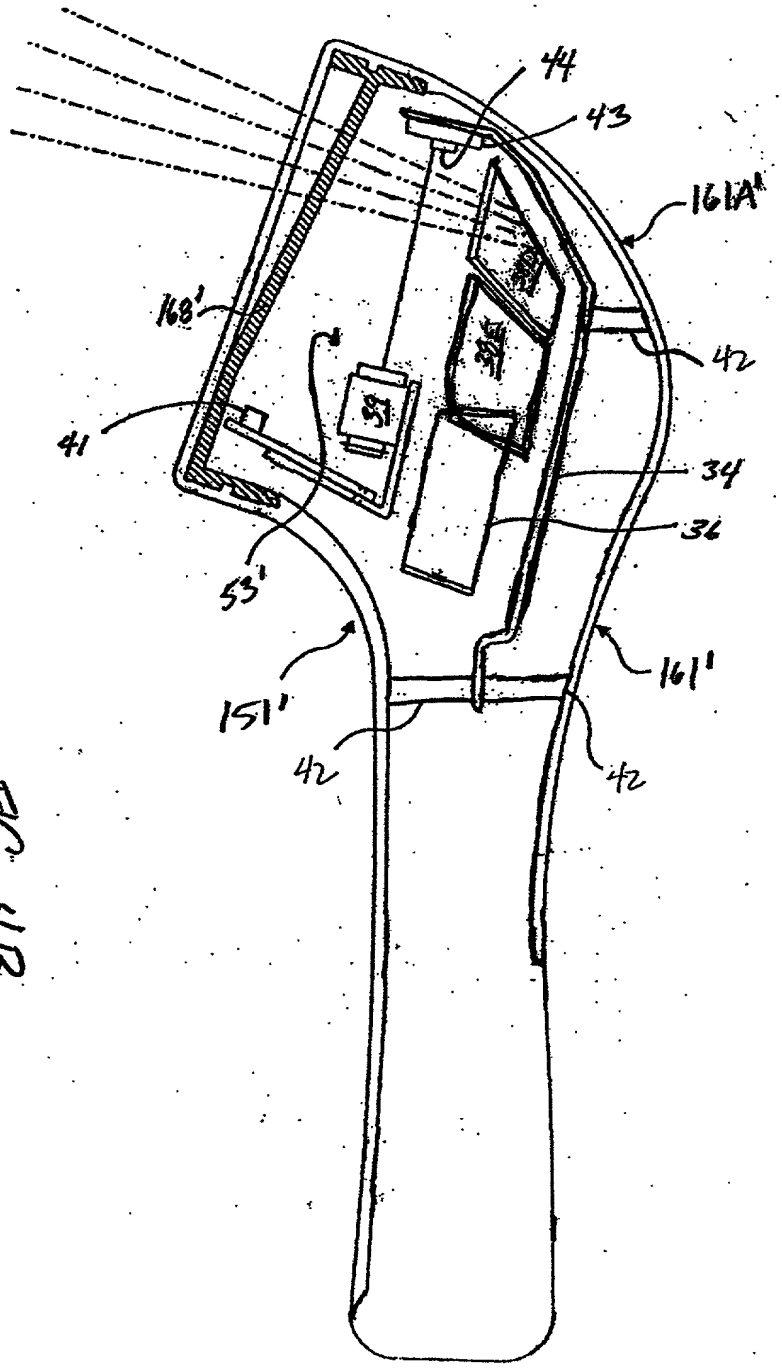


FIG. 4B

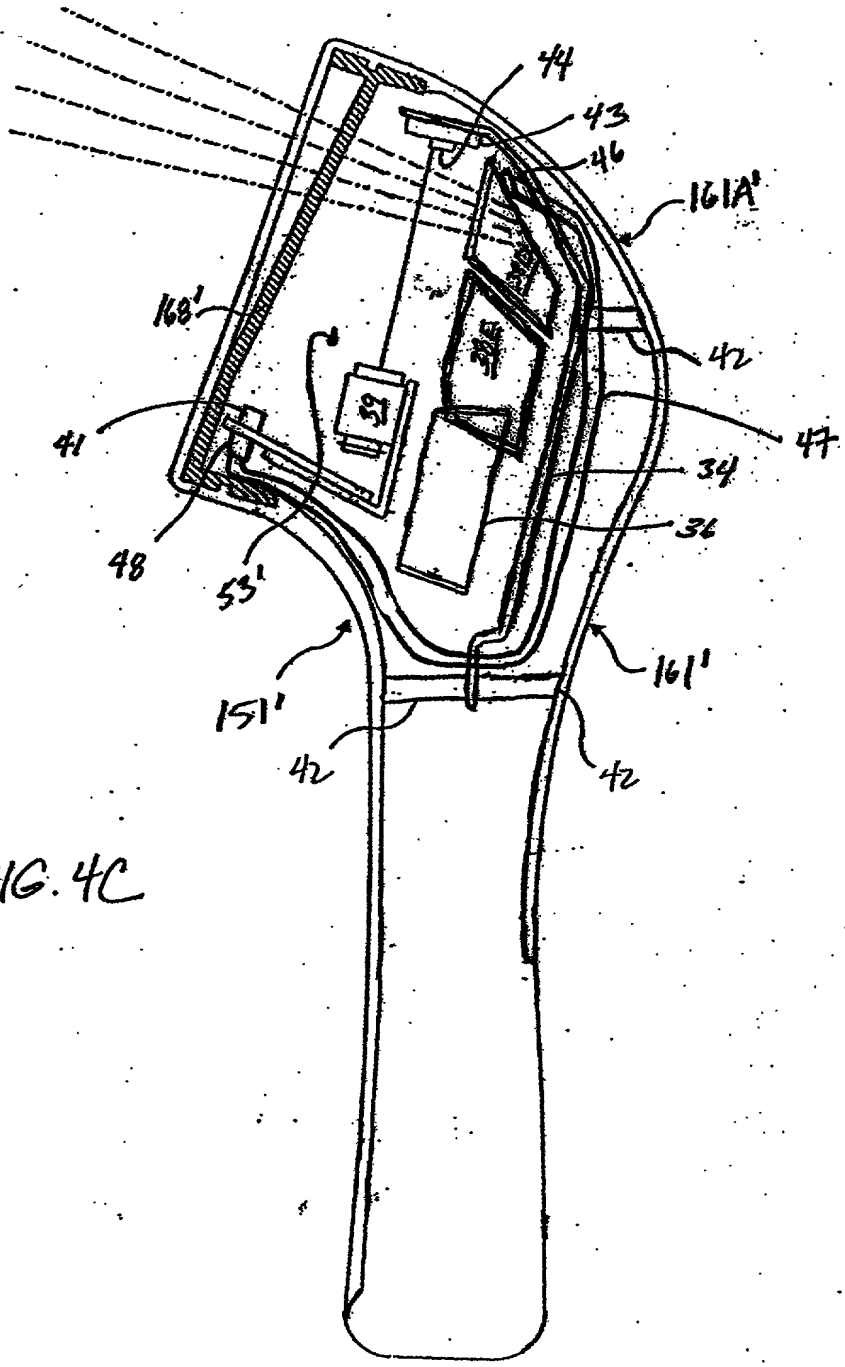


FIG. 4C

20030042-040802

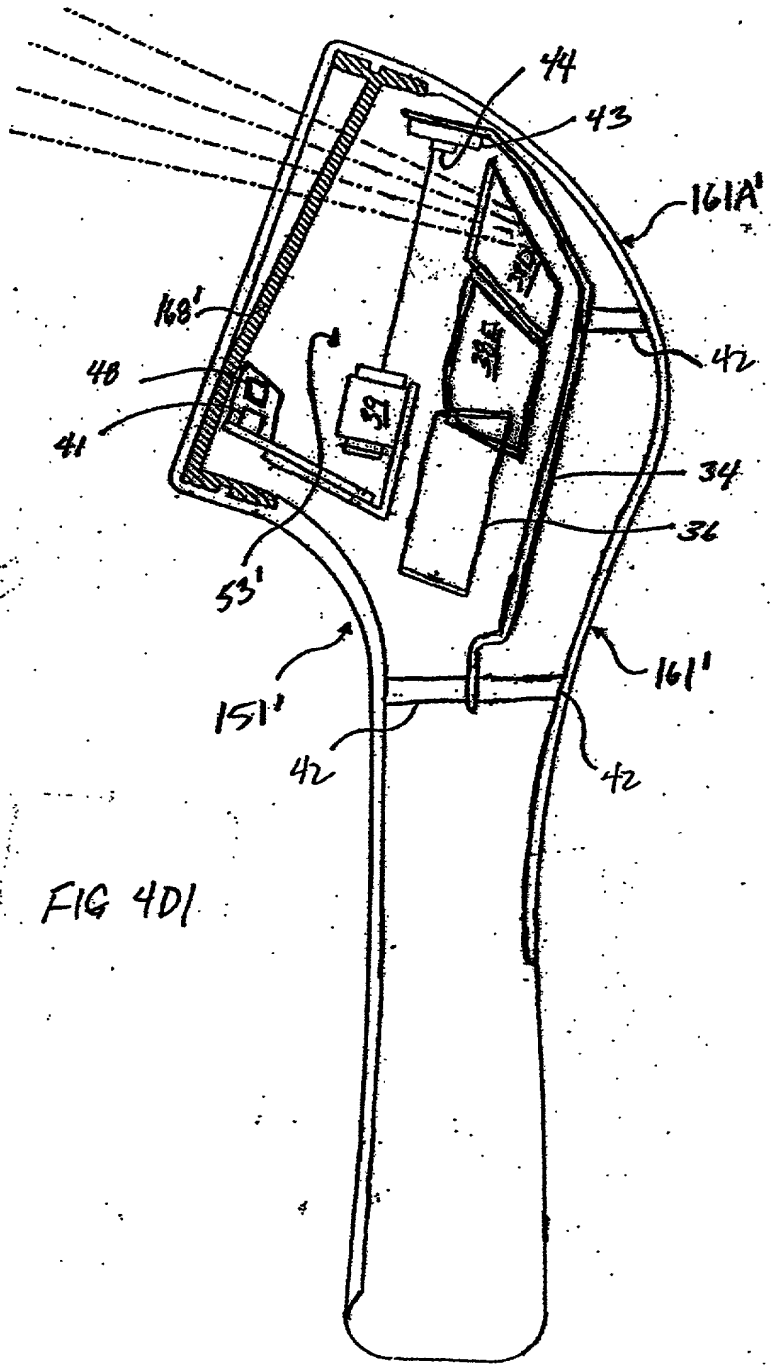


FIG 4D1

20030102.0140.0242 - US 10/634,900

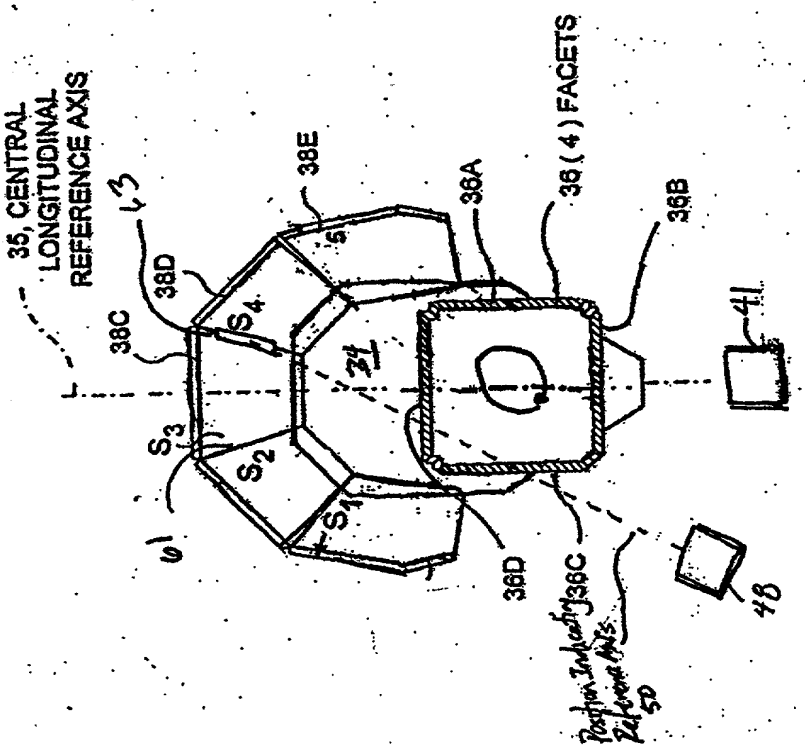

35, CENTRAL LONGITUDINAL REFERENCE AXIS
L3
38C
38D
38E
36A
36 (4) FACETS
36B
41
S_4
S_3
S_2
S_1
34
61
36D
36C
48
50

FIG. 4D2

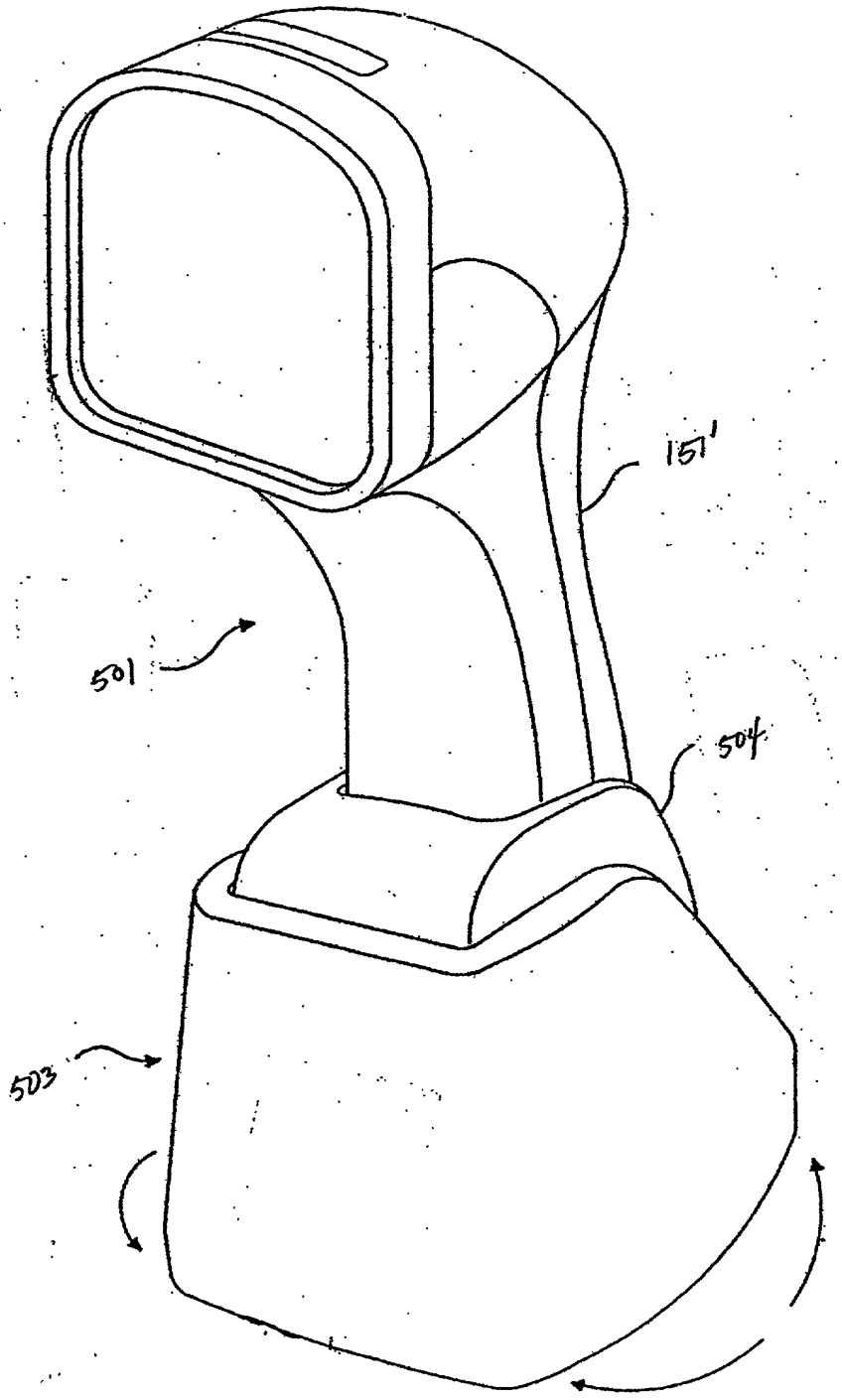


FIG. 5A

20040042407

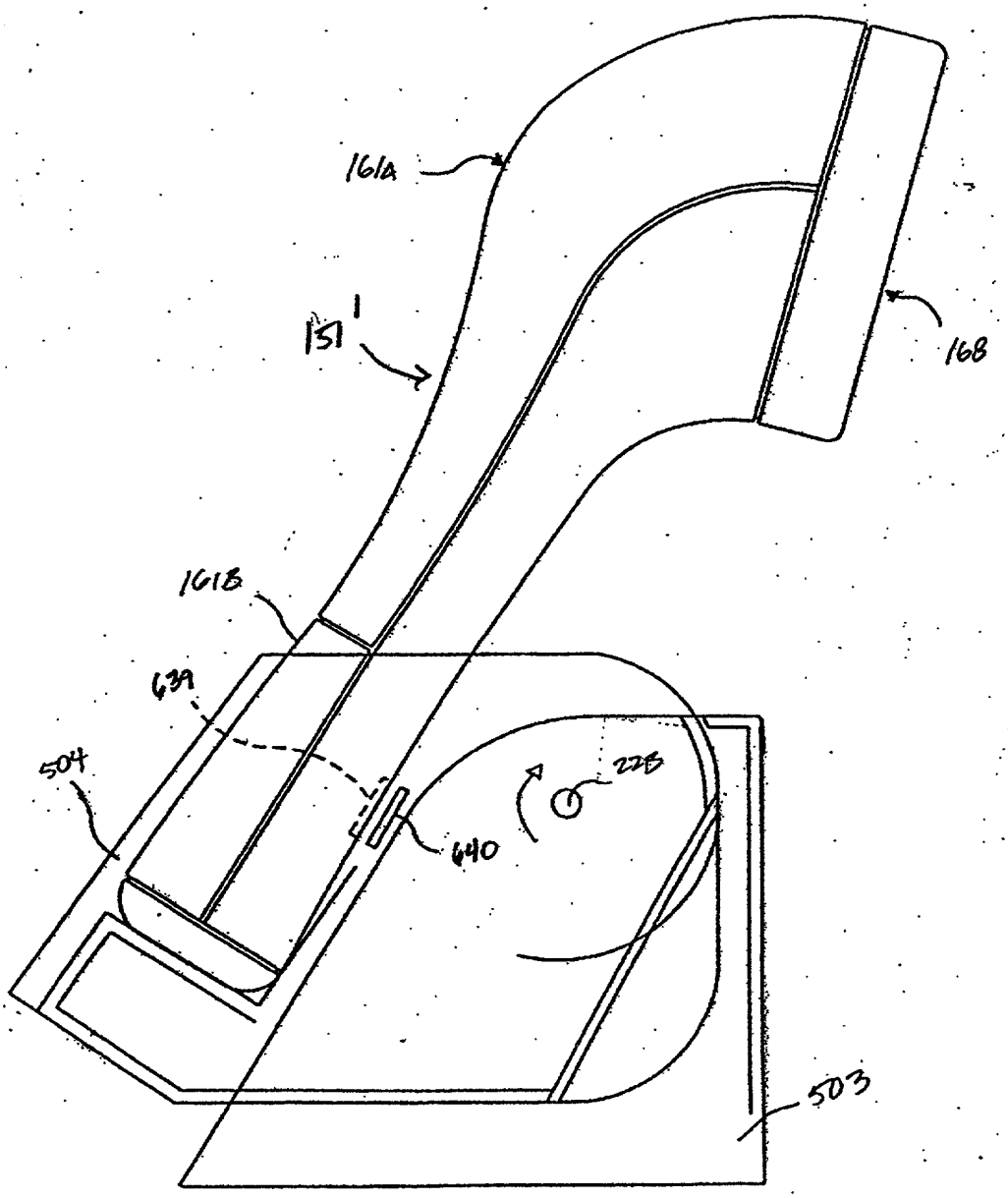


FIG. 5B

20080410 24c4tc04

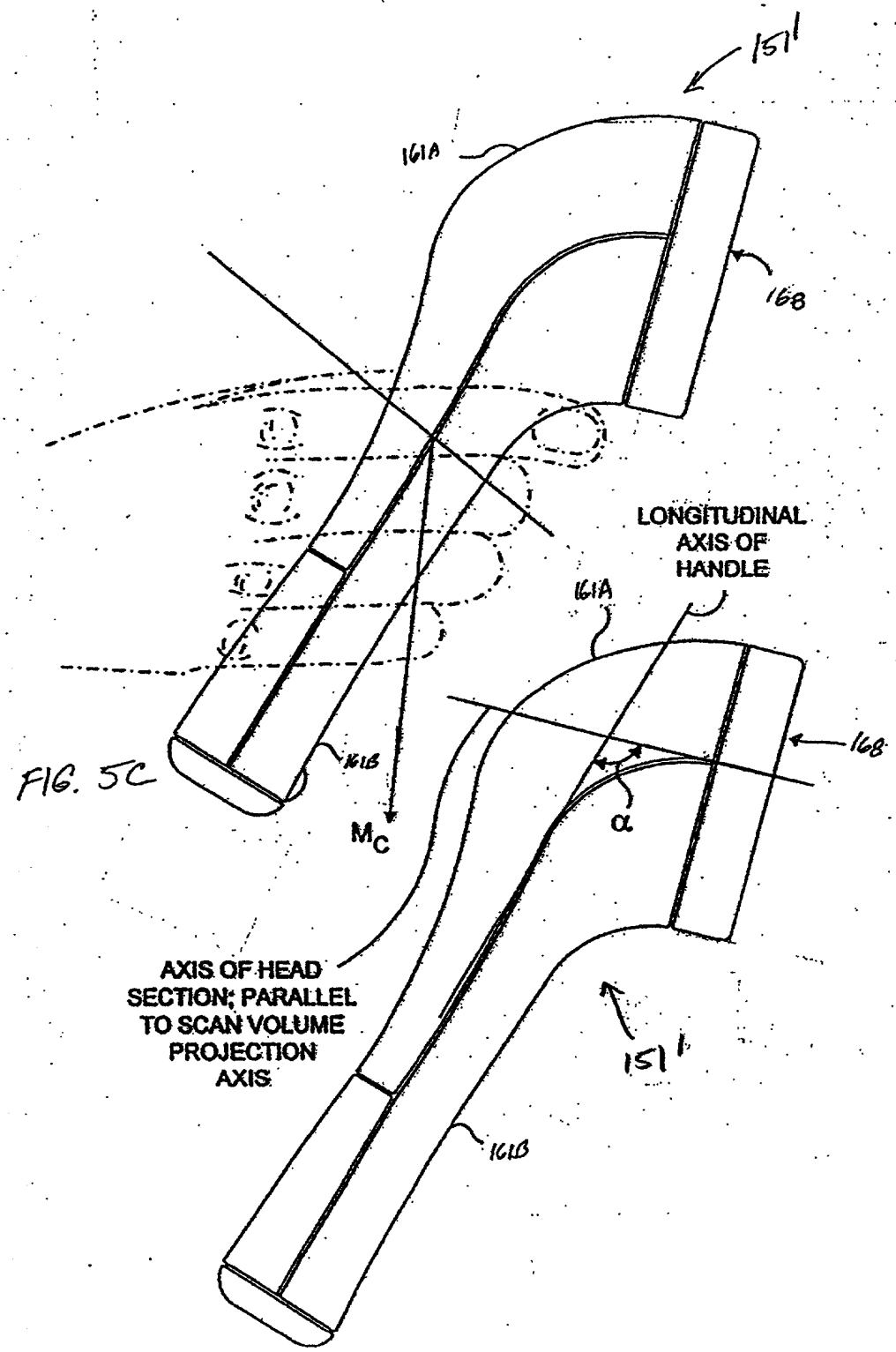
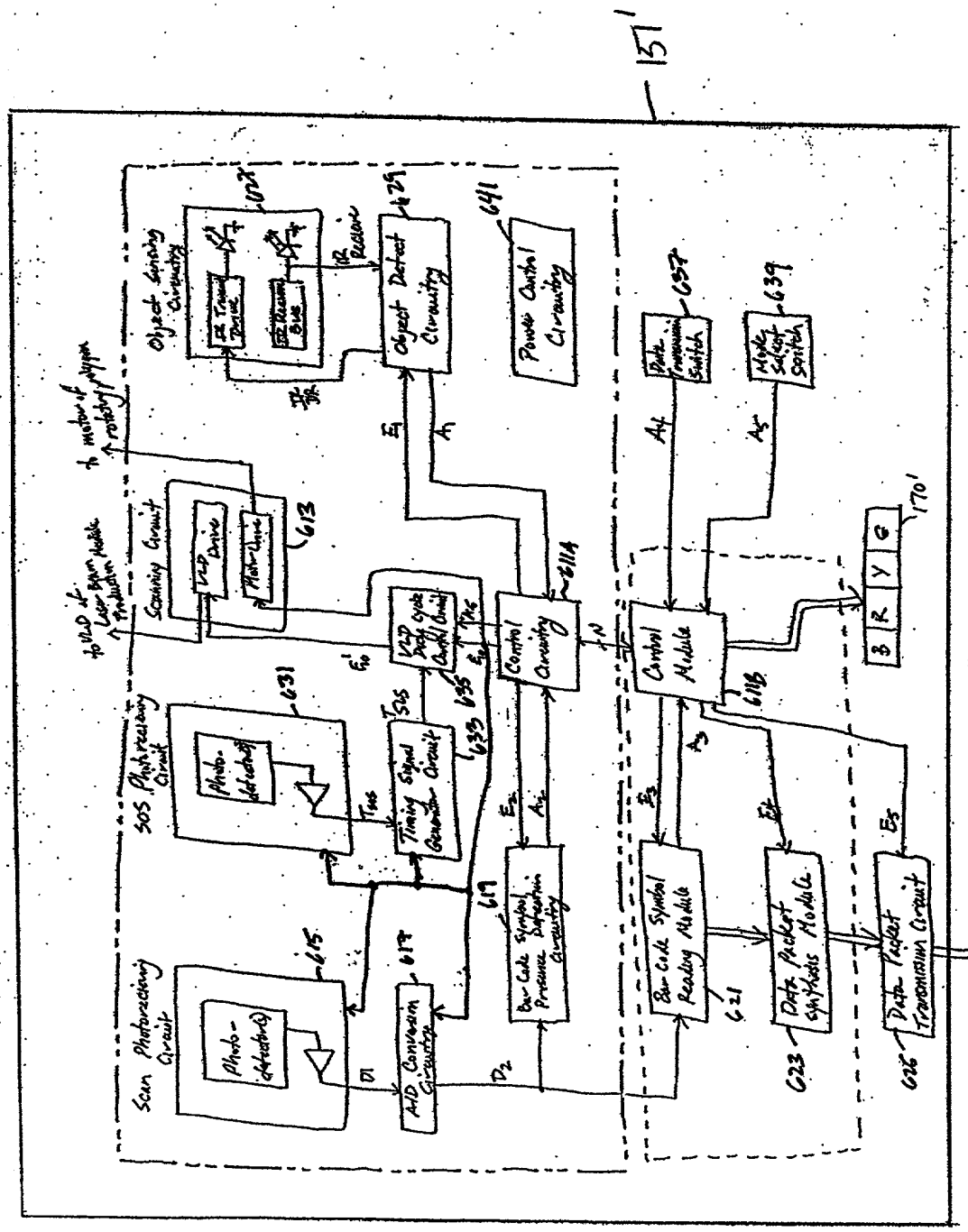


FIG. 5C

FIG. 5D

20080040 - 2434 - 0040802 - 1001434 - 1001


151'
Object Sensing Circuitry
IR Transmitting Device
IR Receiving Device
Object Detect Circuitry
Power Control Circuitry
Motor of rotating polygon
Laser Beam Modulation
Scanning Circuit
Motor Drive
Motor Sensor
SOS Photosensing Circuit
Photo-detector
Timing Signal Generator Circuit
VCO Drive Control Circuit
Control Circuitry
Scan Photosensing Circuit
Photo-detector
A/D Conversion Circuitry
Bar Code Symbol Presence Detection Circuitry
Bar Code Symbol Reading Module
Control Module
Data Transmission Switch
Mode Selection Switch
Data Packet Synthesis Module
Data Packet Transmission Circuit
B
R
Y
G
Base Unit
Host Device
503
FIG. 6

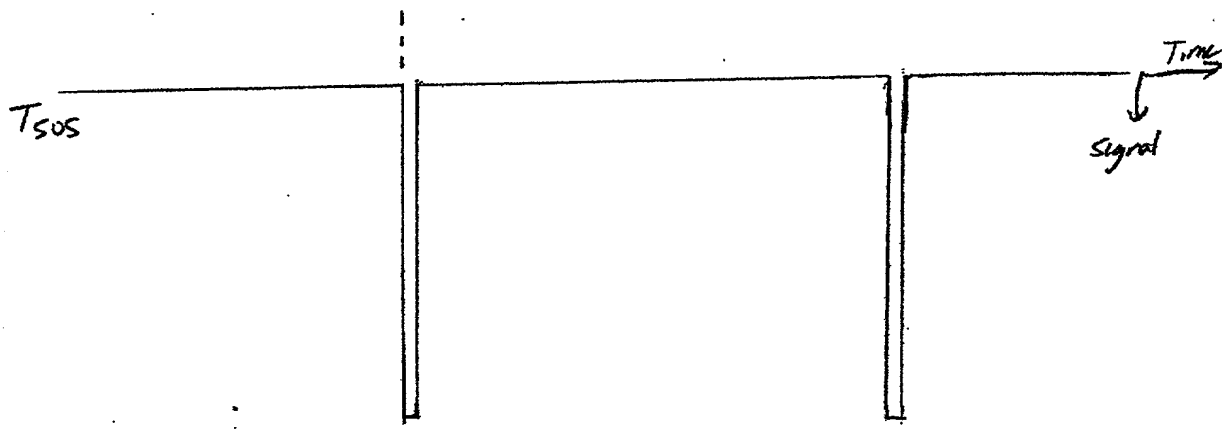


FIG. 7A

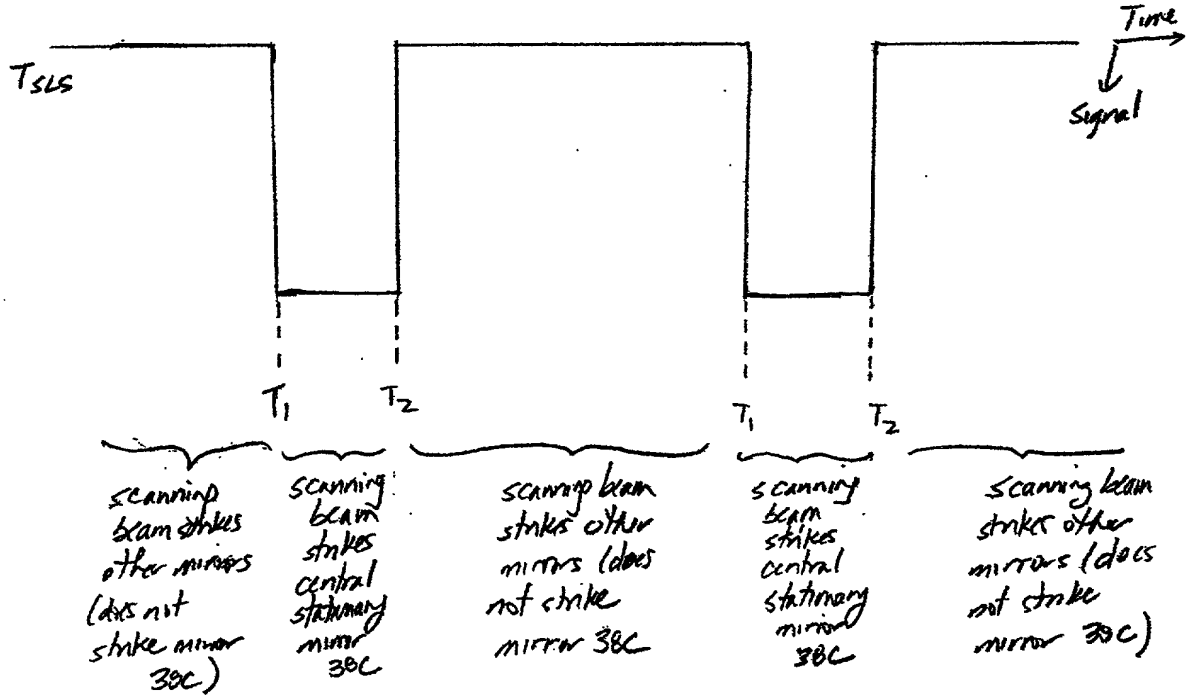


FIG. 7B

$$E_{10}' = (\overline{T_{SLS}} \cdot E_{10} \cdot A_S) + (E_{10} \cdot \overline{A_C})$$

FIG. 7C

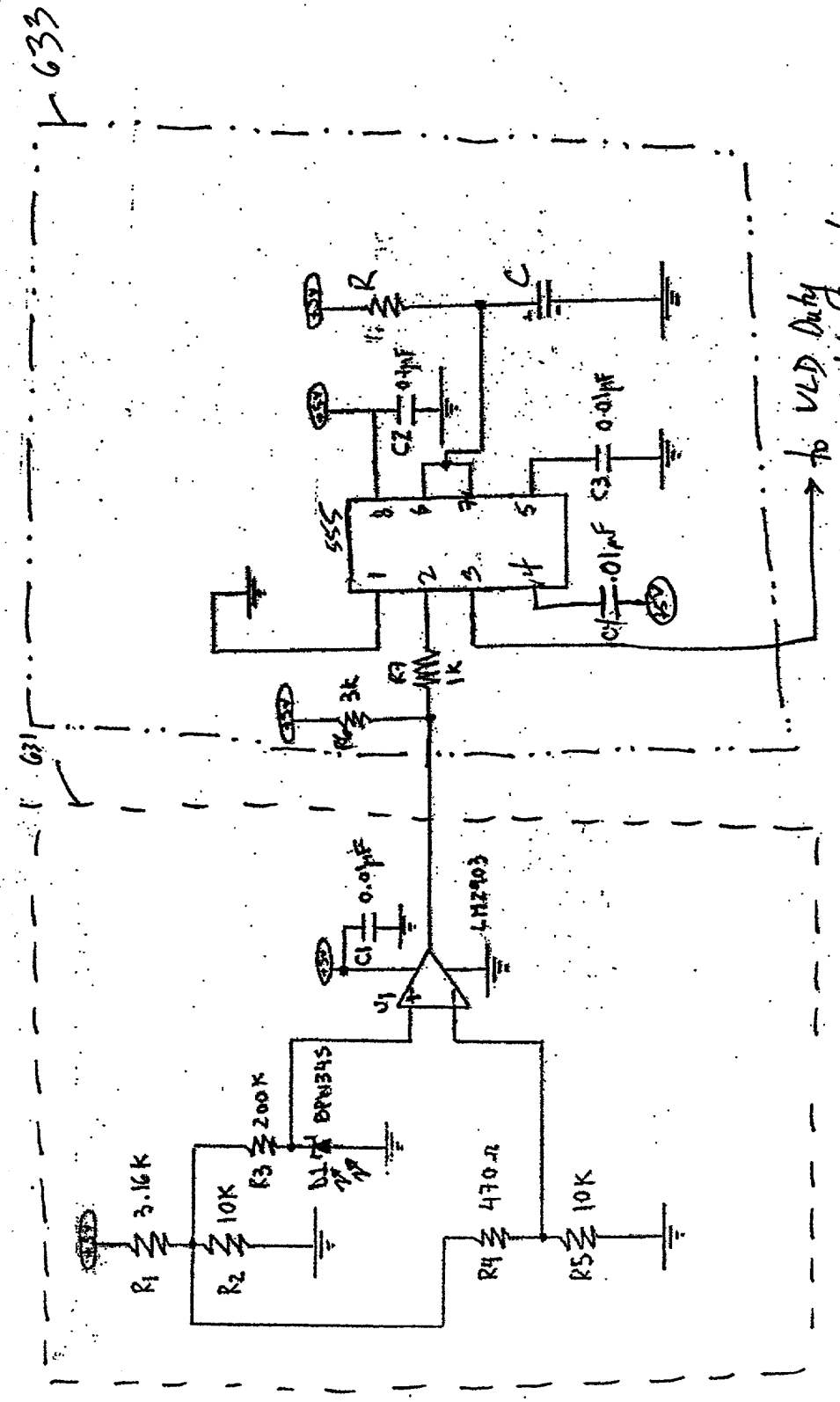
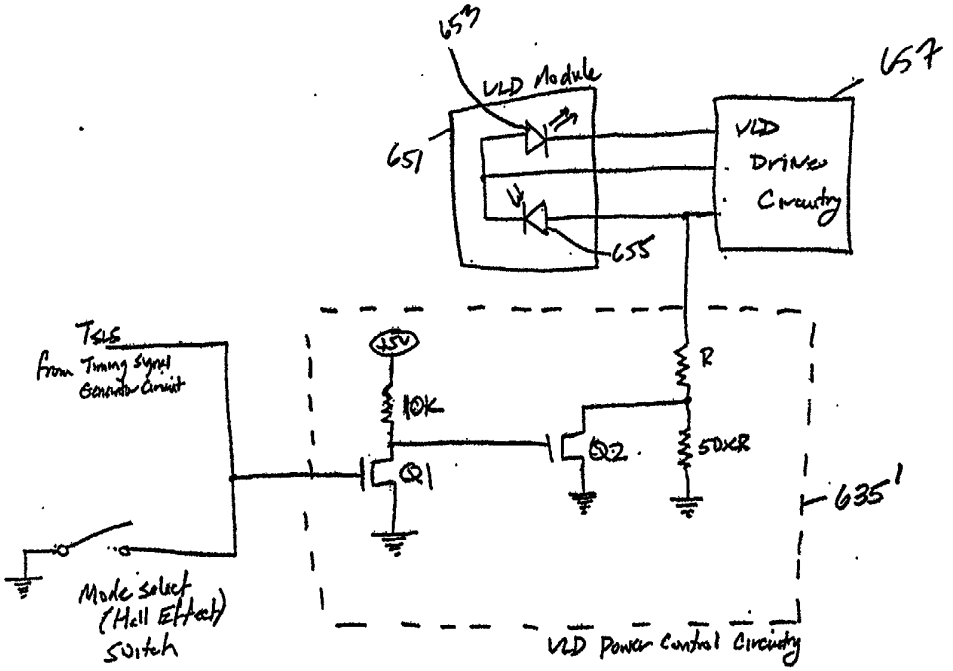
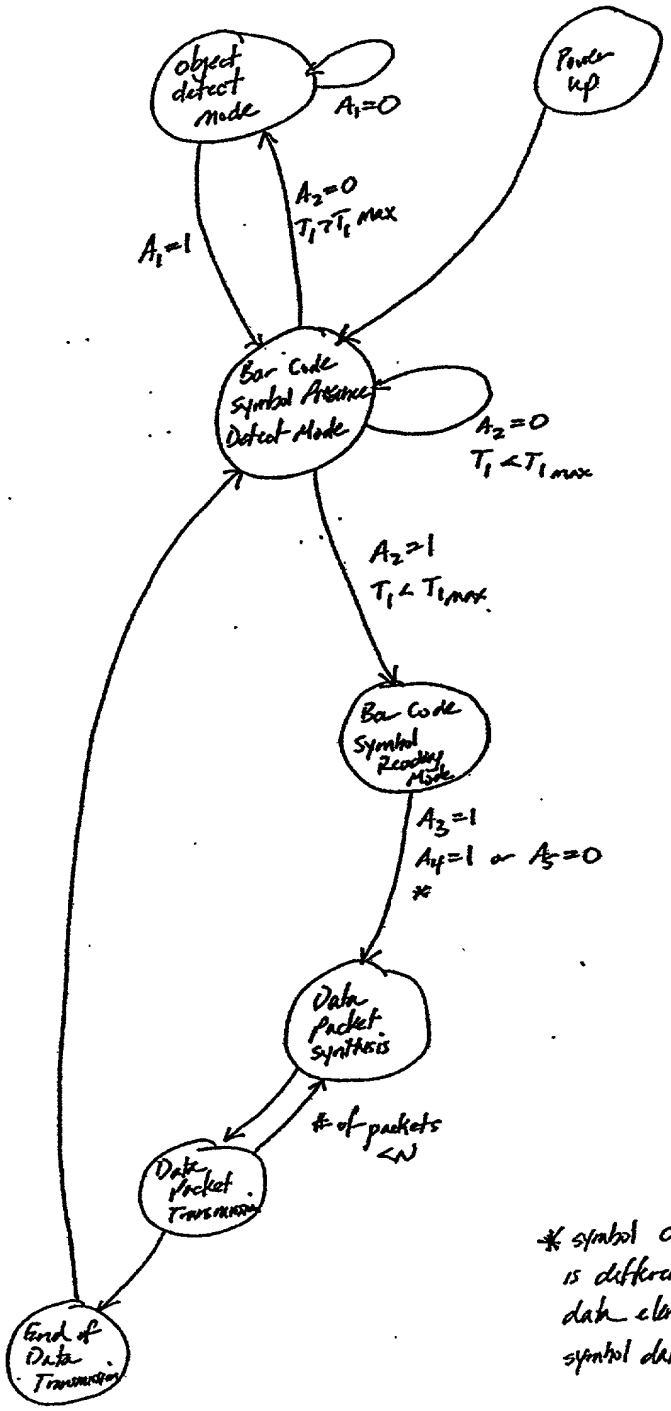

633
631
R
C
C2 0.1μF
C3 0.01μF
555
C4 .01μF
to VLD Duty Control Circuitry 635
R3 1K
3k
C1 0.01μF
LM2903
U1
R1 3.16K
R2 10K
R3 200K
D1 BAW135
R4 470-Ω
R5 10K

FIG. 7D



Mode Select	T_{SLS}	Q1	Q2	R_{EFF}	P_{LASER}
Open	H	ON	OFF	~51R_{SBT}	Low
Open	L	OFF	ON	~R_{SBT}	Normal
Closed	X	OFF	ON	~R_{SBT}	Normal

FIG. 7E



* symbol character data is different than data element in decoded symbol data buffer

FIG. 8

20040042 04.24.2001

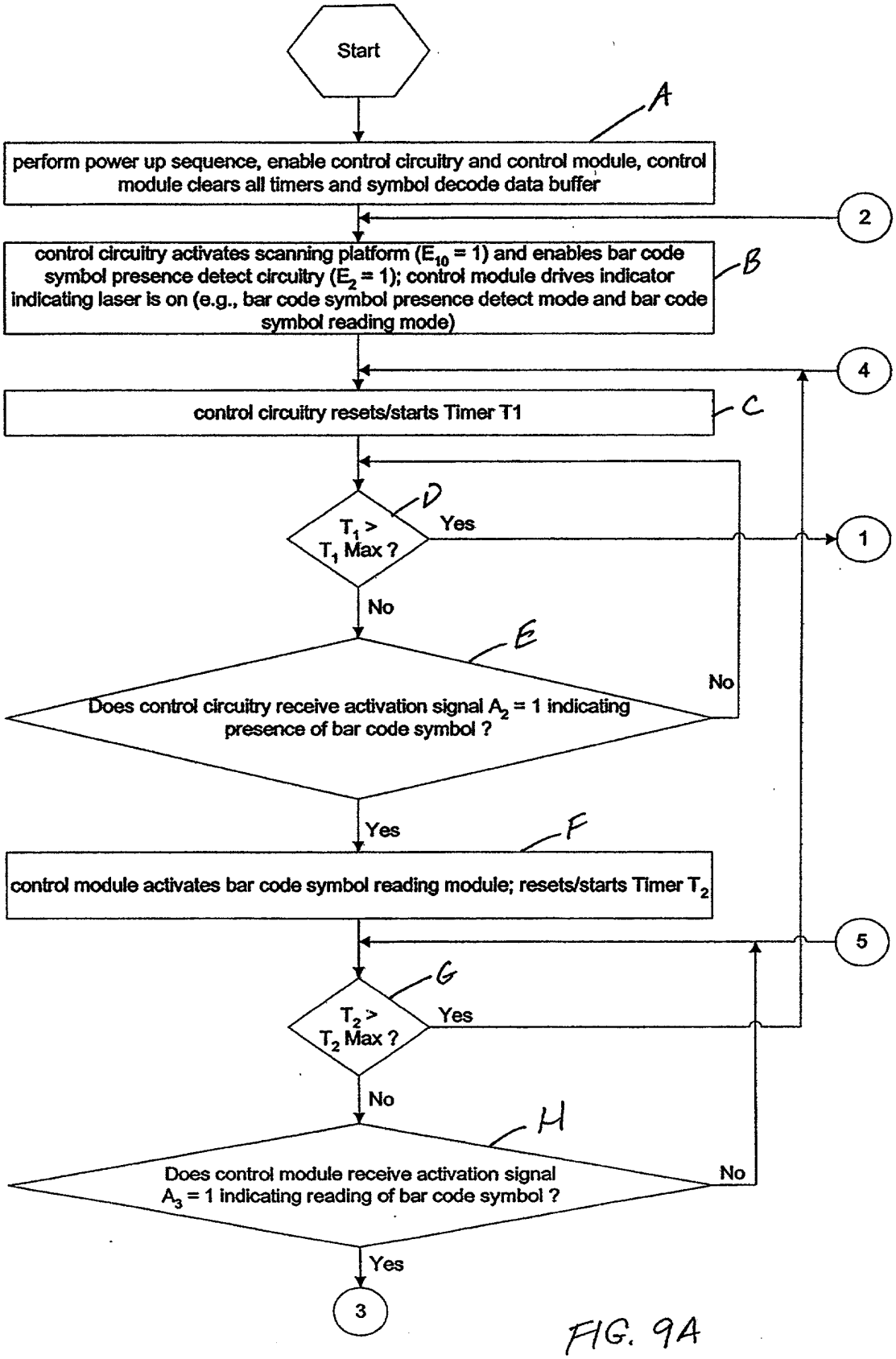

Start
A
perform power up sequence, enable control circuitry and control module, control module clears all timers and symbol decode data buffer
2
control circuitry activates scanning platform (E_{10} = 1) and enables bar code symbol presence detect circuitry (E_2 = 1); control module drives indicator indicating laser is on (e.g., bar code symbol presence detect mode and bar code symbol reading mode)
B
4
control circuitry resets/starts Timer T1
C
D
T_1 > T_1 Max ?
Yes
1
No
E
Does control circuitry receive activation signal A_2 = 1 indicating presence of bar code symbol ?
No
Yes
F
control module activates bar code symbol reading module; resets/starts Timer T_2
5
G
T_2 > T_2 Max ?
Yes
No
H
Does control module receive activation signal A_3 = 1 indicating reading of bar code symbol ?
No
Yes
3

FIG. 9A

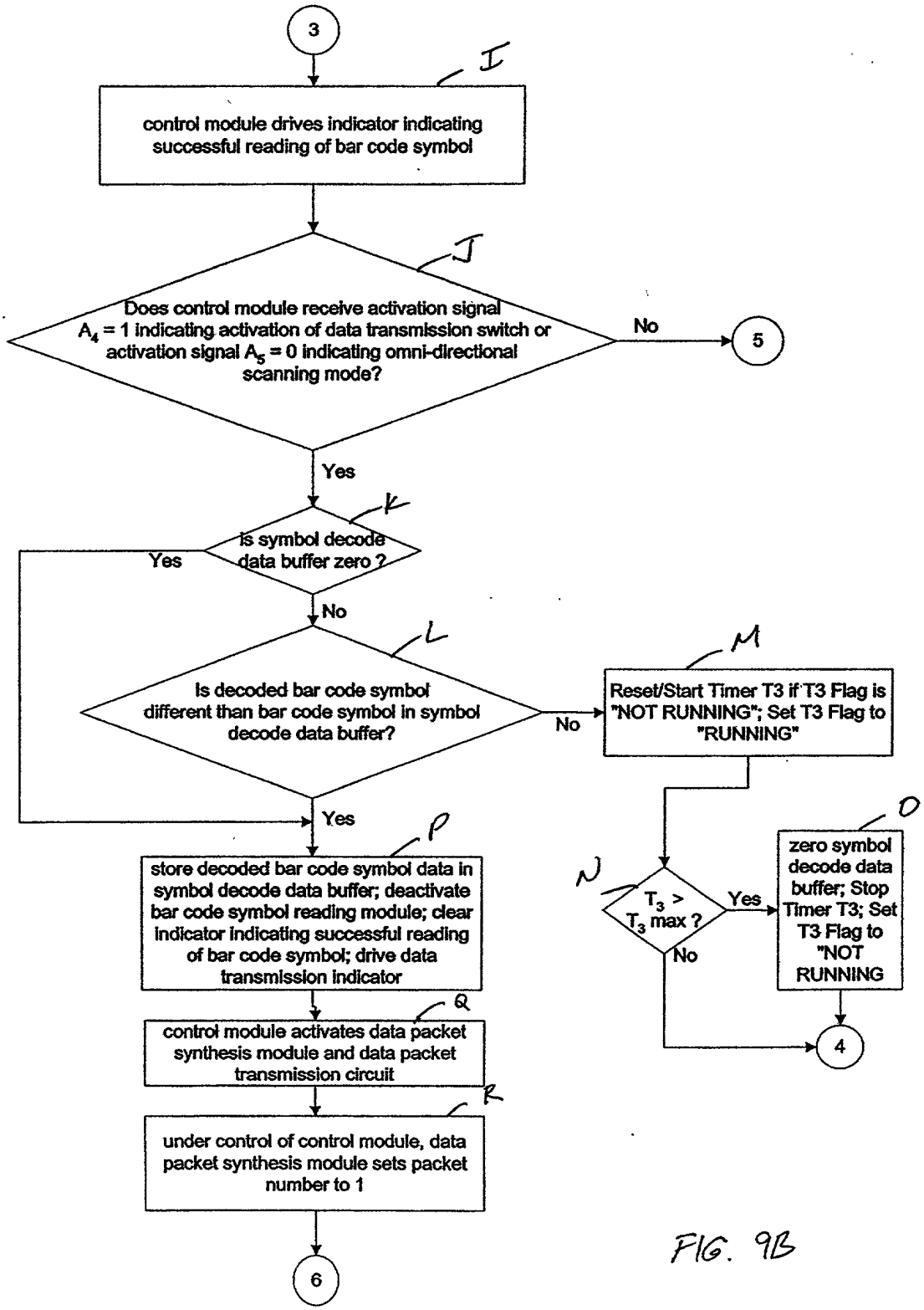

3
I
control module drives indicator indicating successful reading of bar code symbol
J
Does control module receive activation signal $A_4 = 1$ indicating activation of data transmission switch or activation signal $A_5 = 0$ indicating omni-directional scanning mode?
No
5
Yes
K
is symbol decode data buffer zero ?
Yes
No
L
Is decoded bar code symbol different than bar code symbol in symbol decode data buffer?
No
M
Reset/Start Timer T3 if T3 Flag is "NOT RUNNING"; Set T3 Flag to "RUNNING"
Yes
P
store decoded bar code symbol data in symbol decode data buffer; deactivate bar code symbol reading module; clear indicator indicating successful reading of bar code symbol; drive data transmission indicator
Q
control module activates data packet synthesis module and data packet transmission circuit
R
under control of control module, data packet synthesis module sets packet number to 1
6
N
$T_3 > T_3$ max ?
Yes
No
O
zero symbol decode data buffer; Stop Timer T3; Set T3 Flag to "NOT RUNNING
4

FIG. 9B

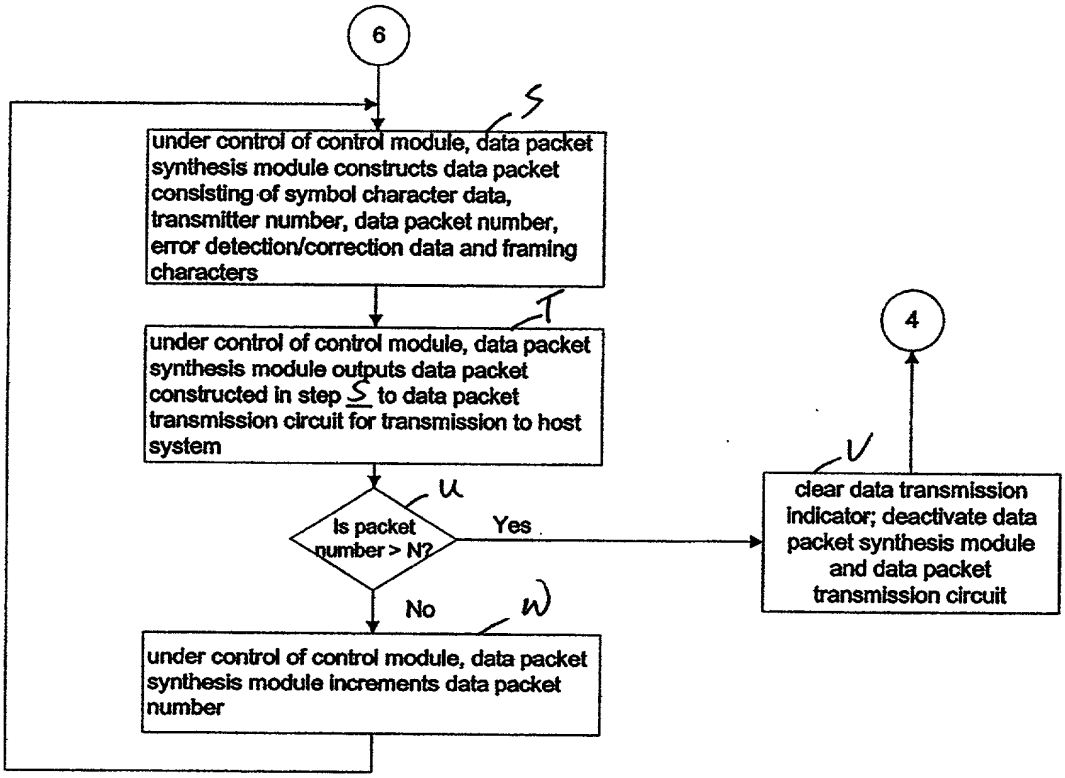

6
S
under control of control module, data packet synthesis module constructs data packet consisting of symbol character data, transmitter number, data packet number, error detection/correction data and framing characters
T
under control of control module, data packet synthesis module outputs data packet constructed in step S to data packet transmission circuit for transmission to host system
U
Is packet number > N?
Yes
No
V
clear data transmission indicator; deactivate data packet synthesis module and data packet transmission circuit
4
W
under control of control module, data packet synthesis module increments data packet number

FIG. 9C

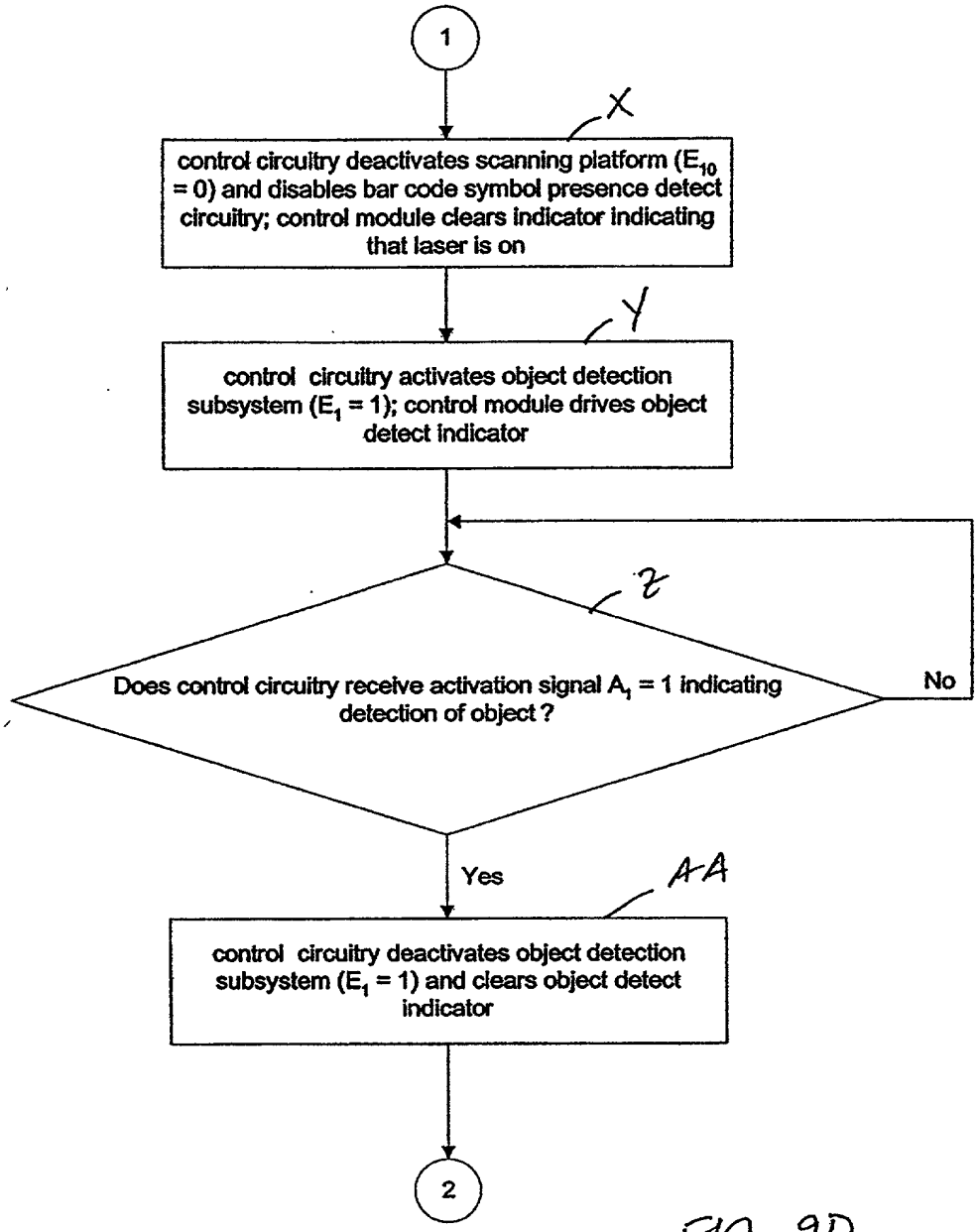

1
X
control circuitry deactivates scanning platform (E_{10} = 0) and disables bar code symbol presence detect circuitry; control module clears indicator indicating that laser is on
Y
control circuitry activates object detection subsystem (E_1 = 1); control module drives object detect indicator
Z
Does control circuitry receive activation signal A_1 = 1 indicating detection of object?
No
Yes
AA
control circuitry deactivates object detection subsystem (E_1 = 1) and clears object detect indicator
2

FIG. 9D